

(12) **United States Patent**  
**Rodriguez De Luis et al.**

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(54) **ANTENNA-TO-BEAMFORMER  
ASSIGNMENT AND MAPPING IN PHASED  
ARRAY ANTENNA SYSTEMS**

(58) **Field of Classification Search**  
None  
See application file for complete search history.

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(57) **ABSTRACT**

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In one embodiment of the present disclosure, a phased array antenna system includes a first portion carrying an antenna lattice including a plurality of antenna elements, wherein the plurality of antenna elements are arranged in a first configuration, a second portion carrying a beamformer lattice including a plurality of beamformer elements, wherein the plurality of beamformer elements are arranged in a second configuration different from the first configuration, and a third portion disposed between the first portion and the second portion carrying at least a portion of a mapping including a first plurality of mapping traces on a first surface providing at least a portion of the electrical connection between the plurality of antenna elements and the plurality of beamformer elements, wherein each of the plurality of antenna elements are electrically coupled to one of the plurality of beamformer elements.

**Related U.S. Application Data**

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**H01Q 3/30** (2006.01)  
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(52) **U.S. Cl.**  
CPC ..... **H01Q 3/30** (2013.01); **H01Q 1/38** (2013.01); **H01Q 3/267** (2013.01); **H01Q 3/2658** (2013.01)

**41 Claims, 23 Drawing Sheets**

